

WHAT IS CLAIMED IS:

1. An information providing system, comprising:  
an information processing apparatus; and  
5 an information supplying apparatus for supplying image data of omnidirectional images to the information processing apparatus over a network,

10 wherein the information supplying apparatus obtains viewpoint information set by the information processing apparatus; encodes the image data of the omnidirectional images, based on the obtained viewpoint information, such that image data of an image in a second direction has a lower resolution than image data of an image in a first direction corresponding to the viewpoint information, the first direction and the second direction being different from each other; and transmits the encoded image data of the omnidirectional images to the information processing apparatus, and

15 wherein the information processing apparatus decodes, out of the received image data of the omnidirectional images, image data corresponding to the viewpoint information, and outputs the decoded image data.

2. An information providing method for an information providing system in which an information supplying apparatus supplies image data of omnidirectional images  
20 to an information processing apparatus over a network, the information providing method comprising:

an information supplying method; and

an information processing method,

25 wherein the information supplying method includes the steps of obtaining viewpoint information set by the information processing apparatus; encoding the image data of the omnidirectional images, based on the obtained viewpoint information, such that image data of an image in a second direction has a lower resolution than image data of an image in a first direction corresponding to the viewpoint information, the first direction

and the second direction being different from each other; and transmitting the encoded image data of the omnidirectional images to the information processing apparatus, and wherein the information processing method includes the steps of decoding, out of the received image data of the omnidirectional images, image data corresponding to the viewpoint information, and outputting the decoded image data.

3. An information supplying apparatus that supplies image data of omnidirectional images to at least one information processing apparatus over a network, the information supplying apparatus comprising:

10 receiving means for receiving viewpoint information from the at least one information processing apparatus;

encoding means for encoding the image data of the omnidirectional images, based on the viewpoint information received by the receiving means, such that image data of images in a second direction has a lower resolution than image data of an image in a first direction corresponding to the viewpoint information, the first direction and the second direction being different from each other; and

transmitting means for transmitting the image data of the omnidirectional images which is encoded by the encoding means to the at least one information processing apparatus.

20 4. An information supplying apparatus according to claim 3, wherein the encoding means encodes the image data in a joint photographic experts group 2000 format.

25 5. An information supplying apparatus according to claim 3, wherein the encoding means encodes the image data of the omnidirectional images, so that, of the images in the second direction, an image in a direction farther from the first direction has an even lower resolution.

6. An information supplying apparatus according to claim 3, wherein the resolution is set by the number of pixels or the number of colors.

7. An information supplying apparatus according to claim 3, further comprising storing means for storing the image data of the omnidirectional images which is encoded by the encoding means.

8. An information supplying apparatus according to claim 7, further comprising combining means for combining the image data of the omnidirectional images which is encoded by the encoding means into one file of image data, wherein the storing means stores the one file of image data combined by the combining means.

9. An information supplying apparatus according to claim 7, further comprising converting means for converting, based on the viewpoint information, the resolution of the image data of the images in the second direction, the image data being stored by the storing means, into a lower resolution, wherein the transmitting means transmits the image data of the omnidirectional images which is converted by the converting means.

20 10. An information supplying apparatus according to claim 3, further comprising selecting means for selecting, based on the viewpoint information received by the receiving means from the information processing apparatuses, a highest resolution of the resolutions of the image data of the images in the second direction, the image data being transmitted to the information processing apparatuses, wherein the transmitting means transmits image data of the omnidirectional images which has a resolution lower than or equal to the resolution selected by the selecting means.

11. An information supplying method for an information supplying apparatus that supplies image data of omnidirectional images to an information processing apparatus over a network, the information supplying method comprising:

5        a receiving step of receiving viewpoint information from the information processing apparatus;

10      an encoding step of encoding the image data of the omnidirectional images, based on the viewpoint information received in the receiving step, such that image data of an image in a second direction has a lower resolution than image data of an image in a first direction corresponding to the viewpoint information, the first direction and the second direction being different from each other; and

15      a transmitting step of transmitting the image data of the omnidirectional images which is encoded in the encoding step to the information processing apparatus.

12. A recording medium in which a program for an information supplying apparatus that supplies image data of omnidirectional images to an information processing apparatus over a network is recorded, the program being readable by a computer, the program comprising:

20      a receiving step of receiving viewpoint information from the information processing apparatus;

25      an encoding step of encoding the image data of the omnidirectional images, based on the viewpoint information received in the receiving step, such that image data of an image in a second direction has a lower resolution than image data of an image in a first direction corresponding to the viewpoint information, the first direction and the second direction being different from each other; and

25      a transmitting step of transmitting the image data of the omnidirectional images which is encoded in the encoding step to the information processing apparatus.

13. A program executed by a computer for controlling an information supplying apparatus that supplies image data of omnidirectional images to an information processing apparatus over a network, the program comprising:

5        a receiving step of receiving viewpoint information from the information processing apparatus;

10      an encoding step of encoding the image data of the omnidirectional images, based on the viewpoint information received in the receiving step, such that image data of an image in a second direction has a lower resolution than image data of an image in a first direction corresponding to the viewpoint information, the first direction and the second direction being different from each other; and

      a transmitting step of transmitting the image data of the omnidirectional images which is encoded in the encoding step to the information processing apparatus.